Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A method of detecting the presence of at least one dinoflagellate, specifically *K. brevis,* in a water sample comprising the steps of:
identifying a unique gene sequence associated with the organism *K. brevis*;amplifying the unique gene sequence-contained in the water sample using at least one purified primer, the primer having at least one *K. brevis* specific internal probe affixed thereto, the internal probe having a label attached thereto; and detecting the presence of the unique gene sequence within the sample.

[c2] The method of claim 1 wherein the amplification step is performed by reverse transcriptase polymerase chain reaction.

[c3] The method of claim 2 wherein the unique gene sequence is a 91-base-pair region of the *K. brevis* rbcL gene.

[c4] The method of claim 2 wherein the purified primer sequence for real time reverse transcriptase polymerase chain reaction is SEQ ID NO: 1.

[c5] The method of claim 2 wherein the purified primer sequence for real time reverse transcriptase polymerase chain reaction is SEQ ID NO: 2.

[c6] The method of claim 2 wherein the internal probe for real time reverse transcriptase polymerase chain reaction is SEQ ID NO: 3.

[c7] The method of claim 2 wherein the label attached to the internal probe is a fluorogenic compound.

[c8] The method of claim 2 wherein detection is achieved utilizing epifluoresence microscopy.

[c9] The method of claim 1 wherein the amplification step is performed by nucleic acid based amplification.

[c10] The method of claim 9 wherein the unique gene sequence is an 87-base-pair region of the *K. brevis* rbcL gene.

[c11] The method of claim 9 wherein the purified primer sequence for nucleic acid sequence based amplification is SEQ ID NO: 4.

[c12] The method of claim 9 wherein the purified primer sequence for nucleic acid sequence based amplification is SEQ ID NO: 5.

[c13] The method of claim 9 wherein the internal probe for nucleic acid sequence based amplification is SEQ ID NO: 6.

[c14] A method of detecting the presence of at least one dinoflagellate, specifically *K. brevis,* in a water sample comprising the steps of: identifying a unique gene sequence associated with the organism *K. brevis,* wherein the unique gene sequence is an 87-base-pair region of the *K. brevis* rbcL gene; amplifying the unique gene sequence contained in the water sample using at least one purified primer, wherein the amplification step is performed by reverse transcriptase polymerase chain reaction, wherein the purified primer sequence for real time reverse transcriptase polymerase chain reaction is chosen from the group consisting of SEQ ID NO: 1 and SEQ. ID No. 2, the primer having at least one *K. brevis* specific internal probe affixed thereto, wherein the internal probe for real time reverse transcriptase polymerase chain reaction is SEQ ID NO: 3, the internal probe having a label attached thereto, wherein the label attached to the internal probe is a flourogenic compound; and detecting the presence of the unique gene sequence within the sample, wherein detection is achieved utilizing epiflouresence microscopy.

[c15] A method of detecting the presence of at least one dinoflagellate, specifically *K. brevis,* in a water sample comprising the steps of: identifying a unique gene sequence associated with the organism *K. brevis,* wherein the unique gene sequence is a 91-base-pair region of the *K. brevis* rbcL gene; amplifying the unique gene sequence contained in the water sample using at least one purified primer, wherein the amplification step is performed by nucleic acid sequence based amplification, wherein the purified primer sequence for real time reverse transcriptase polymerase chain reaction is chosen from the group consisting of SEQ ID NO: 4 and SEQ. ID No. 5, the primer having at least one *K. brevis* specific internal probe affixed thereto, wherein the internal probe for real time reverse transcriptase polymerase chain reaction is SEQ ID NO: 6, the internal probe having a label attached thereto; and detecting the presence of the unique gene sequence within the sample.